

**REVISED SIZES AND POSITIONS FOR
THE MAILYAN DWARF GALAXY CATALOGUE**

Madore, B. F., Sun, H., Bennett, J., Corwin, H. G. Jr.,

Helou, G., Lague, C., Schmitz, M., and Wu, X.

NASA/IPAC Extragalactic Database

Infrared Analysis and Processing Center

Jet Propulsion Laboratory

California Institute of Technology

Pasadena, CA 91125

Received

Address for Proofs:

Running Headline: *Mailyan Dwarf Galaxies*

Barry F. Madore

NASA/IPAC Extragalactic Database

Infrared Analysis and Processing Center MC 100-22

California Institute of Technology

Pasadena, CA 91125.

ABSTRACT

New positions (good to ± 15 arcsec), revised sizes, and sample cross-identifications are presented for dwarf galaxies discovered and published by Mailyan (1973). Of the 104 originally cataloged galaxies we were able to recover only 100, despite an extensive search of the red and blue POSS prints. Over half of the recovered objects were found to correspond to previously cataloged galaxies.

Subject *headings*: galaxies: individual - galaxies:

I. INTRODUCTION

As part of an on-going effort within the *NASA/IPAC Extragalactic Database* (NED) to provide the best available positions and the most reliable cross-identifications for cataloged extragalactic objects (e.g., Spellman *et al.* 1989) we have recently undertaken a merger of the Mailyan (1973) list of dwarf galaxies into the NED Master Directory. In order to accomplish this goal, however, it proved necessary, *in this particular instance*, to extensively search for and recover each of the objects by eye. This was deemed necessary after ascertaining early-on that Mailyan's published co-ordinates were exceedingly at variance with well-determined positions for a number of already documented matches.

Any machine-automated cross-identification process between the Mailyan Catalog and the NED Master Directory would have been ill-advised: (a) many incorrect matches would have arisen due to the very large uncertainty ellipse associated with the originally cataloged positions, (b) spurious new objects would have been created when positions were so much in error that even generous error ellipses (~ 30 arcmin) failed to include them, (c) truly new objects in the Mailyan list would have been entered into the NED database with poorly defined positions and uncertain errors, and finally, (d) apparently non-existent objects would have been entered into NED. Without a visual inspection, a fully automated processing of this list would certainly have led to an unacceptable and, otherwise almost unavoidable error rate.

11. NEW POSITIONS

Computer-generated transparent overlays were made for each of the 104 objects tabulated by Mailyan (1973) using, for a first iteration, his originally published positions. Millimeter offsets were measured by eye from the *Palomar Observatory Sky Survey* (POSS) prints with the aid of a 10X magnification lupe equipped with a focal-plane metric graticule. These offsets from the nominal position were then used to calculate new positions. Considering that some of the corrections were in fact very large (in some cases up to one degree), the new positions were checked with a second set of new overlays, and revised accordingly. The accuracy of the new positions determined in this manner is limited both by one's ability to place the overlay into proper register, and by the inherent uncertainty in consistently adopting a 'center' for some of the more asymmetric and irregular dwarf irregular galaxies encountered here. Based on this work, and previous experience by ourselves and others using this technique, we expect the new positions to be good to ± 15 arcsec.

Figures 1 and 2 show histogram representations of the differences between the original positions and those newly determined here. After 2σ rejection the redetermined rms scatter between the two catalogs is ± 6.4 arcmin in RA, with a mean offset of 1.3 arcmin; in DEC the rms scatter was ± 4.1 arcmin, after a systematic mean offset, of 4.3 arcmin was removed. All offsets are quoted in the sense Mailyan minus this study.

111. DISCUSSION

The positions of dwarf galaxies originally collected by Mailyan (1973) have been substantially corrected, making it now possible to include them in the NED data base, and hopefully permit a study of these objects in a systematic way. We estimated that the previously published positions had an *rms* error in excess of ± 4 arcmin in both co-ordinates (with individual excursions up to nearly one degree!) making the probability of recovering these objects in real time (at the telescope, say) virtually impossible. Cross-identifications to previous galaxy lists have been made in the course of intercomparing the newly derived positions with the NED Master Directory: we find that 45 of Mailyan's objects (almost all being smaller than one arcmin) are previously uncataloged dwarf galaxies. Still, some of the Mailyan galaxies could not be recovered by us at all; after a careful visual inspection of wide fields around the nominal positions it has been possible to recover 100 of the original 104 galaxies listed. For the unrecovered galaxies (Mailyan 22, 29, 101, and 104) we repeat in Table 1 the positions and the major diameters published by Mailyan, but flag the entire entry with a footnote. For those galaxies that were recovered we present new major and minor diameters as measured on both the red (E) and the blue (O) prints of the 1' OSS; these values are listed in Columns 4 and 5 of Table 1.

This work was supported in part by the Jet Propulsion Laboratory, California Institute of Technology, under the sponsorship of the Astrophysics Division of NASA's Office of Space Science and Applications. Naturally, we made extensive use of the *NASA/IPAC Extragalactic Database* in the course of this investigation.

References

Mailyan, N. S. 1973, *Astrofizika*, 9, 33

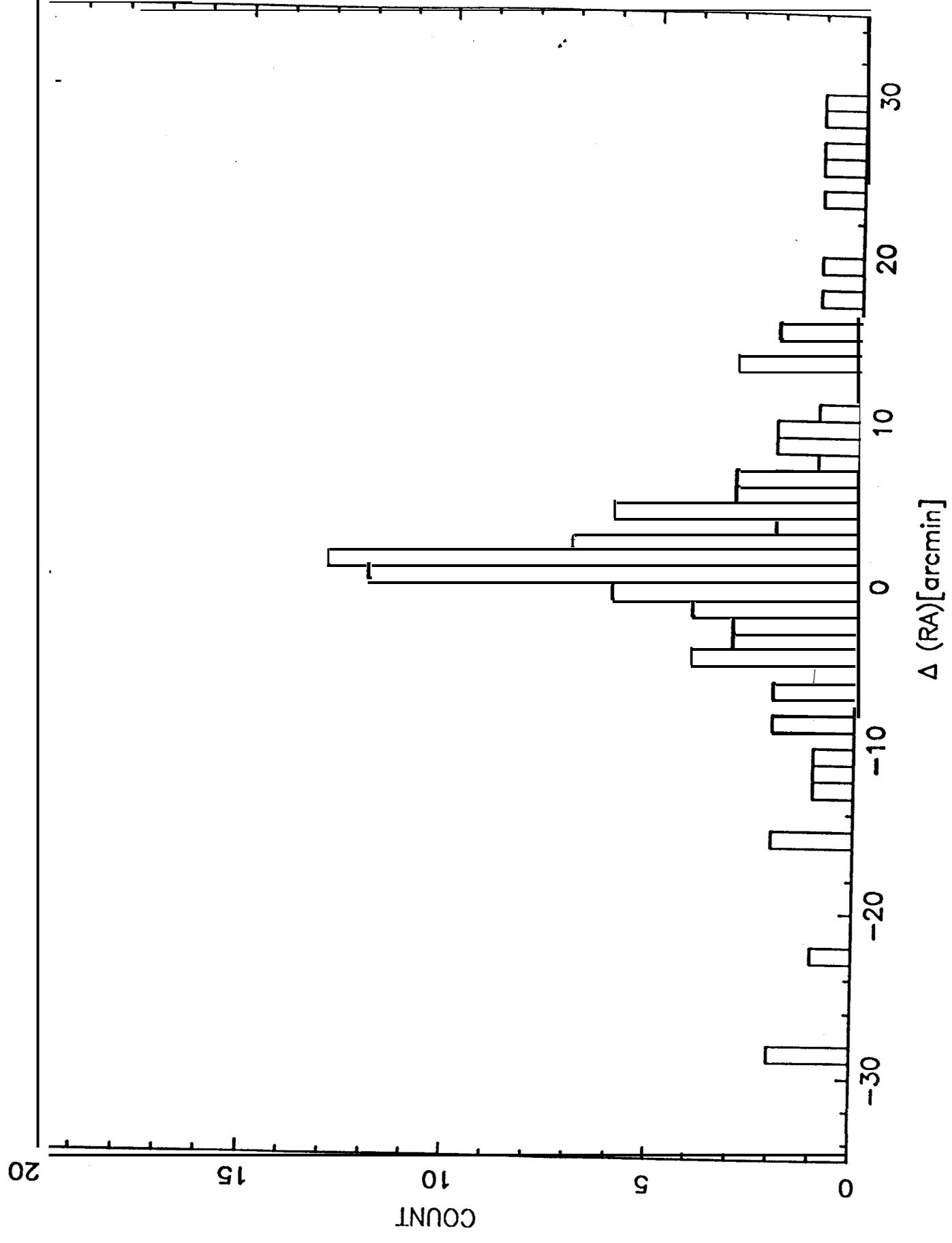
Spellman, K., Madore, B. P., & Helou, G. 1989, *IAU*, 101, 360

Figure Captions

Fig. 1 - A histogram of the measured positional residuals in Right Ascension, in the sense Mailyan (1973) minus NED. After a 2σ rejection of extreme outliers the calculated uncertainty in RA for in the original catalogue is ± 6.4 arcmin.

Fig. 2- A histogram of the measured positional residuals in DEC in the sense Mailyan (1973) minus NED. After 2σ rejection the calculated uncertainties in DEC for the original catalogue is ± 4.1 arcmin.

MAILYAN GALAXY RIGHT ASCENSION OFF-SETS



MAILYAN GALAXY DECLINATION OFF-S^t VI

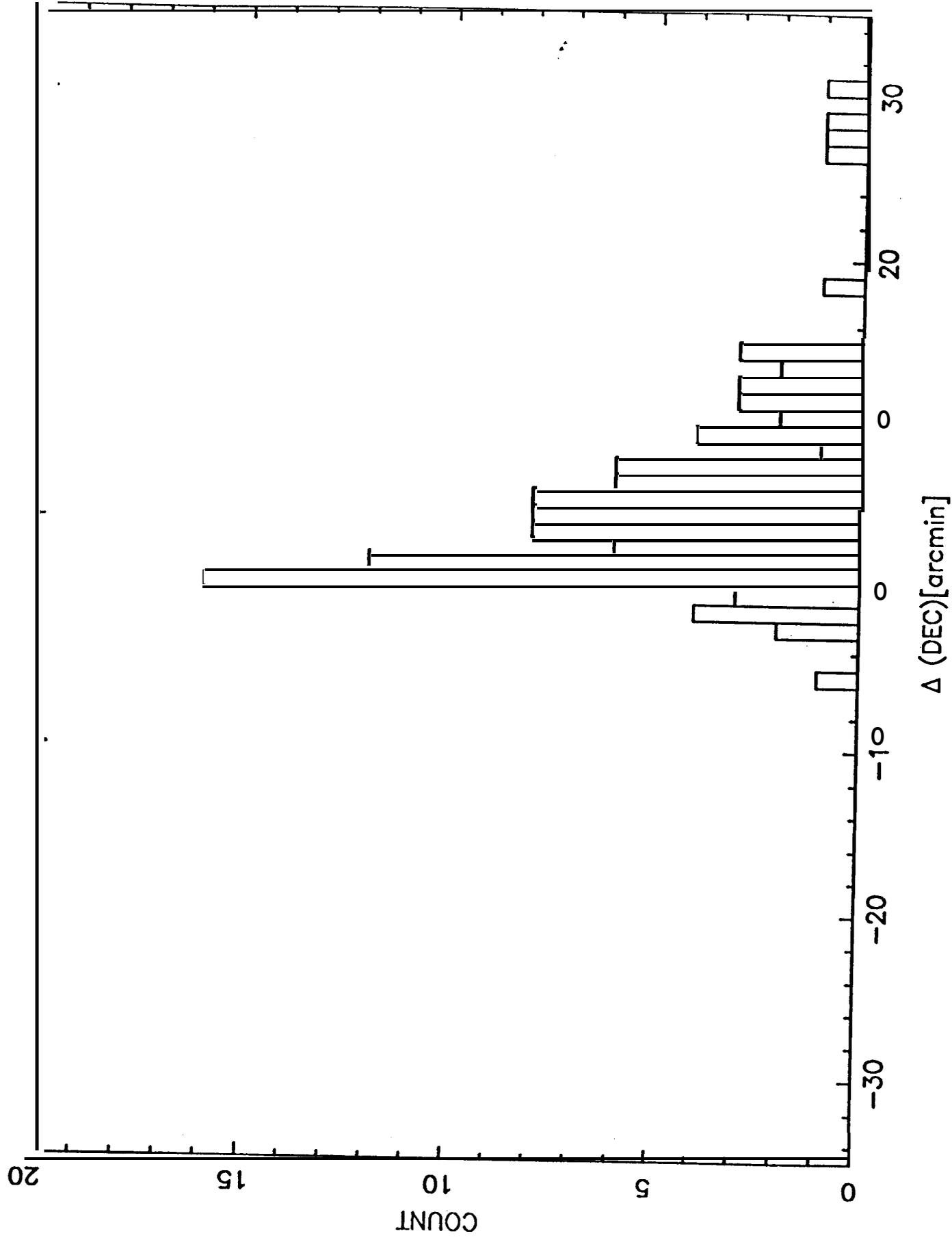


TABLE 1

Mailyan Dwarf Galaxies

Mailyan No.	RA (1950)	DEC (1950)	1' OSS '0' ma x mi (arcmin)	1' OSS 'E' ma x mi (arcmin)	Cross-Identifications or Footnote
001	020653	+82 22.0	0.8 x 0.7	0.8 x 0.6	MCG +14-02-008
002	031116	+81 09.9	0.8 x 0.3	0.8 x 0.4	UGC 02603
003	034440	+88 38.2	0.8 x 0.1	1.0 x 0.2	UGC 02886A
004	035808	+79 42.4	0.7 x 0.6	0.7 x 0.6	UGC 02917
005	045049	+89 18.2	1.0 x 0.4	1.0 x 0.4	UGC 03211A
006	040620	+85 43.1	0.7 x 0.4	0.7 x 0.5	IRAS F04062+8542
007	050744	+81 33.7	0.5 x 0.3	0.4 x 0.3	
008	051048	+74 20.5	0.7 x 0.2	0.5 x 0.2	
009	051848	+72 36.2	0.7 x 0.5	0.8 x 0.5	
010	052925	+78 41.7	1.3 x 0.5	0.9 x 0.6	
011	054946	i-75 18.4	2.2 x 1.4	1.6 x 1.2	UGC 03371
012	055305	+68 33.1	0.8 x 0.4	0.6 x 0.3	
013	055321	+73 25.4	0.6 x 0.5	0.8 x 0.5	
014	061058	+74 49.6	0.7 x 0.4	0.6 x 0.4	
015	070425	+89 08.8	0.4 x 0.3	0.4 x 0.3	
016	063853	+80 10.5	0.7 x 0.5	0.8 x 0.5	
017	064211	+60 12.2	0.8 x 0.7	1.0 x 0.8	
018	064946	+71 30.0	0.5 x 0.4	0.5 x 0.3	
019	070056	+66 02.3	0.6 x 0.5	0.5 x 0.4	
020	070319	+78 28.9	0.6 x 0.3	0.6 x 0.6	UGC 03671
021	070946	+75 49.6	1.0 x 0.8	0.8 x 0.6	
022	071703	+66 56	0.5	0.5	1
023	072458	+59 01.4	0.9 x 0.5	0.8 x 0.4	
024	074829	+61 30.8	0.7 x 0.6	0.6 x 0.6	
025	080154	i-73 20.3	0.5 x 0.5	0.8 x 0.4	KUG 0801+733
026	080906	-t-73 39.6	0.6 x 0.5	0.6 x 0.4	ARP 009
027	081332	+85 05.8	0.6 x 0.3	0.6 x 0.3	MCG +14-04-047
028	082156	+79 00.1	1.0 x 0.6	1.0 x 0.4	
029	082759	+59 11	0.5	0.5	1
030	082957	+84 30.3	0.6 x 0.6	0.5 x 0.5	
031	083018	+78 00.2	0.7 x 0.5	0.7 x 0.5	UGC 04466
032	083413	+67 32.7	0.8 x 0.6	0.6 x 0.5	MCG +11+11-018
033	083811	+77 06.1	0.6 x 0.5	0.6 x 0.5	UGC 04527
034A	084151	+78 43.1	0.6 x 0.6	0.5 x 0.5	2
034B	084131	+78 43.3	0.7 x 0.4	0.7 x 0.3	2
035	084438	+74 05.0	0.5 x 0.5	0.5 x 0.5	
036	084833	+73 43.1	0.6 x 0.5	0.6 x 0.5	UGC 04634
037	085400	+59 16.4	1.0 x 0.6	0.9 x 0.7	MCG +10-13-046
038	090507	+60 15.8	0.8 x 0.3	0.8 x 0.5	
039	091658	+75 58.8	1.0 x 0.7	1.0 x 0.9	UGC 04945

TABLE 1 (continued)

Mailyan Dwarf Galaxies

Mailyan No.	RA (1950)	DEC (1950)	POSS '0' ma x mi (arcmin)	POSS 'E' ma x mi (arcmin)	Cross-Identifications or Footnote
040	091804	+85 31.5	0.6 x 0.5	0.5 x 0.5	UGC 04948
041	092424	+74 33.0	0.6 x 0.4	0.7 x 0.5	
042	092622	4-6319.8	0.5 x 0.4	0.6 x 0.4	IRAS F09259+6316
043	093625	+58 45.7	0.6 x 0.4	0.5 x 0.4	MCG +10-14-029
044	093600	+71 24.6	2.7 x 2.0	2.7 x 1.8	UGC 05139
045	094102	+69 37.1	1.2 x 0.5	1.4 x 0.8	
046	094940	+58 42.8	0.8 x 0.6	0.7 X 0.6	MCG +10-14-046
047	095301	+68 49.8	1.2 x 1.0	0.8 x 0.6	
048	095325	+69 17.2	1.4 x 1.2	1.4 X 0.8	UGC 05336
049	1001 16	46648.1	1.2 x 1.0	1.2 X 1.0	UGC 05428 = DDO 071
050	100309	+68 04.4	1.4 x 0.8	1.2 X 0.6	UGC 05442
051	100447	+70 52.7	0.9 x 0.6	0.8 X 0.6	UGC 05455
052	101446	+65 58.5	0.8 x 0.5	..	3
053	102353	+71 29.5	0.7 x 0.4	0.7 x 0.5	UGC 05658
054	102518	+67 03.4	1.2 x 0.5	1.0 x 0.6	UGC 05671
055	102343	+63 24.7	0.8 x 0.6	0.6 x 0.4	
056	102747	+78 03.5	0.8 x 0.5	0.8 x 0.5	MCG +13-08-028
057	104118	+60 37.8	1.4 X 1.4	1.4 x 1.0	UGC 05846 = DDO 086
058	104604	+64 59.0	1.5 x 0.7	1.6x 1.0	UGCA 220
059	111010	+64 11.3	0.5 x 0.4	0.6 x 0.4	
060	11 1238	i-58 45.0	0.6 x 0.5	0.6 x 0.5	
061	11 1456	+58 37.4	1.0 x 0.8	0.7 x 0.7	UGC 06304
062	11 1732	+58 01.0	0.8 x 0.5	0.4 x 0.2	UGC 06344
063	113600	+59 25.5	0.6 x 0.4	0.4 x 0.3	
064	114027	+59 22.9	1.3 x 1.2	1.2 x 1.0	UGC 06682 = DDO 096
065	115241	+56 35.0	0.6 x 0.6	0.5 x 0.5	MCG +09-20-033
066	115749	+79 07.8	0.6 X 0.5	0.7 x 0.5	UGC 06996
067	115758	+85 25.7	0.6 X 0.6	0.6 x 0.6	
068	121742	+75 26.3	0.7 x 0.5	0.9 x 0.5	
069	121948	+56 54.8	0.5 x 0.4	..	3
070	122233	+61 20.5	0.9 x 0.5	1.0 x 0.5	MCG +10-18-044
071	122346	4-5835.7	1.2 x 1.0	0.8 x 0.6	UGC 07534 = 1>1>0123
072	122418	+62 39.3	0.7 x 0.6	0.7 x 0.6	UGC 07544
073	122215	+70 36.8	2.0 x 2.0	2.2 x 2.0	UGC 07490 = 1>1>0122
074	122610	+75 53.2	0.6 x 0.3	0.5 x 0.3	
075	1231 54	4-6450.4	1.0 x 0.7	0.9 x 0.6	MCG +11-15-063
076	123241	+73 56.2	0.5 x 0.2	0.4 x 0.2	UGC 07745
077	12 41 56	+64 04.5	1.0 x 0.5	1.0 x 0.5	UGC 07918
078	124211	+71 03.7	0.8 X 0.7	0.6 x 0.6	
079A	124726	+75 39.4	0.8 X 0.3	0.6 x 0.3	2
079B	124604	+75 36.8	0.7 x 0.4	0.5 x 0.4	2

TABLE 1 (continued)

Mailyan Dwarf Galaxies

Mailyan No.	RA (1950)	DEC (1950)	1'0ss ma x mi (arcmin)	'o' ma x mi (arcmin)	POSS 'E'	Cross-Identifications or Footnote
080	124831	+78 39.4	1.0 x 0.7	0.7 x 0.5		UGC 07995
081	125226	+89 05.2	0.3 x 0.2	0.2 x 0.1		
082	130439	+67 58.2	2.8 x 1.5	3.0 x 1.6		UGC 08201 = DDO 165
083	131126	+85 49.1	0.7 x 0.4	0.5 x 0.3		
084	132333	+58 04.9	1.8 x 1.0	1.8 x 0.8		UGC 08441 = DDO 175
085	132647	+67 53.6	1.0 x 0.5	0.9 x 0.5		
086	133436	+81 35.3	0.6 x 0.2	0.7 x 0.2		
087	134423	+65 38.1	0.5 x 0.5	0.7 x 0.4		
088	134828	+62 58.8	0.8 x 0.7	0.7 x 0.5		UGCA 374
089	135203	+60 17.8	0.8 x 0.5	0.7 x 0.4		
090	142950	+58 58.8	0.4 x 0.3	0.6 x 0.4		
091	143357	+57 28.4	0.8 x 0.5	0.9 x 0.5		UGC 09405 = DDO 194
092	151149	+57 09.5	0.8 x 0.4	0.7 x 0.3		UGC 09776
093	151224	+62 55.4	0.7 x 0.5	0.8 x 0.4		MCG +11-19-002
094	153706	+59 09.7	0.8 x 0.4	0.6 x 0.4		
095	154454	+61 42.2	0.7 x 0.5	0.7 x 0.5		UGC 10031
096	155525	+58 52.7	0.8 x 0.6	0.7 x 0.4		MCG +10-23-008
097	170053	+70 21.7	1.2 x 0.8	1.0 x 0.6		UGC 10669
098	171538	+75 15.6	0.7 x 0.5	0.8 x 0.5		UGC 10792
099	172817	+59 11.1	0.7 x 0.5	0.7 x 0.4		
100	174634	+67 21.6	0.8 x 0.6	0.8 x 0.6		UGC 10991
101	180904	+80 47	0.5	0.5		1
102	182354	+65 16.2	2.0 x 0.3	1.8 x 0.4		UGC 11230
103	185051	+76 54.3	0.6 x 0.4	0.5 x 0.3		
104	223900	+88 17	0.7	0.7		1

1. Not **recovered**; original co-ordinates and diameters listed.
2. One of two components found by NED
3. Too faint to measure reliably on 'E' print